

REMARKS

I. Status of Claims

Claims 1-8 are pending in this application. Claims 1 and 3 are independent. By this amendment, claims 1-4 are amended.

Claims 1-8 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Fujita Yoshihiro (05-053898) (hereinafter “Fujita”) in view of Kobayashi et al (USP 4,550,437) (hereinafter “Kobayashi”).

The Applicant respectfully request reconsideration of these rejections in view of the foregoing amendments and the following remarks.

II. Pending Claims

Independent claims 1 and 3, the only independent claims, stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Fujita in view of Kobayashi.

As shown in FIG. 1, certain embodiments of the present application concern a plurality of memory units 10 in the form of a matrix arranged in a memory unit array 100. A row computing section 40, equivalent to a first calculator, is arranged in row of, and in the number of columns of, the memory unit array 100. A column computing section 50, equivalent to a second calculator, is arranged in column of, and in the number of rows of, the memory unit array 100. In addition, as seen in Fig. 3, a first memory cell 1, a second memory cell 2 and a third memory cell 3 are provided in each of the memory unit 10.

Moreover, in certain embodiments of the present application, as seen in Fig. 3 (See also page 7, lines 14-21 of the specification), the row computing section 40, equivalent to the first calculator of Applicant’s claim 1, performs computation using pixel data stored in the first memory cell 1 in the memory units 10 of the same column and in a plurality of rows (e.g., in the example of Fig. 3, three rows of the second column). A computed result (See e.g., “first processing data” as described on page 6, line 10, of the specification) is stored in the second memory cell 2 in one memory unit among the memory units 10 of the same column and in the plurality of rows (e.g., in the example of Fig. 3, in a middle row among three rows of the second column).

In addition, in the present application, as seen in Fig. 3 (See also page 8, lines 4-14 of the specification), the column computing section 50, equivalent to the second calculator of Applicant's claim 1, performs computation using the first processing data stored in the second memory cell 2 in the memory units 10 of the same row and in a plurality of columns (e.g., in Fig. 3, three columns of the second row). A computed result (See e.g., "second processing data" in page 6, line 12) is stored in the third memory cell 3 in one memory unit among the memory units 10 of the same row and in the plurality of columns (in the example of Fig. 3, in a middle column among three columns of the second row).

That is, in the present application, as described in lines 8-14 on page 6 of the specification, the pixel data is stored in the first memory cell 1 in one memory unit 10, the first processing data is stored in the second memory cell 2, and the second processing data is stored in the third memory cell 3. Therefore, at least three independent data are stored in one memory unit 10.

The Office Action alleges that, in Fujita, Applicant's memory unit array recited in claim 1 is equivalent to an orthogonal memory cell 101 in Fig. 10 of Fujita, and memory units in Applicant's claim 1 is equivalent to 2x2 blocks in Fig. 10 of Fujita (namely, 1 word consisted of 2 bit x 2 bit shown as 1-4). The Office Action further alleges that a first memory cell in Applicant's claim 1 is equivalent to 2x2 block 1 in Fig. 10 of Fujita, a second memory cell in Applicant's claim 1 is equivalent to 2x2 block 2 in Fig. 10 of Fujita, and a third memory cell in Applicant's claim 1 is equivalent to 2x2 block 3 in Fig. 10 of Fujita.

In contrast to the present invention as claimed by the Applicant, in Fujita, as described in paragraph [0022], the 2x2 blocks in Fig. 10 of Fujita--which the Office Action alleges are equivalent to the memory units in Applicant's claim 1--are structured as 1 word consisted of 2 bit x 2 bit shown as 1-4. That is, in Fujita, the 2x2 blocks in Fig. 10, which the Office Action alleges are equivalent to the memory units in Applicant's claim 1, are structured as 1 word so that it can store only one processing data.

More specifically, in Fujita, as described in paragraph [0023], when data (1-4) on a row memory 102 shown in Fig. 10 is transferred to the orthogonal memory cell 101 equivalent to the memory unit array, the data (1-4) on the row memory 102 is stored in all of 2x2 blocks (1-4) in the orthogonal memory cell 101. That is, in this case, the 2x2 blocks equivalent to the memory

units in claim 1 can store the data on the row memory 102 only.

In addition, the Applicant respectfully submits that claim 3 requires “a first step to obtain a first processing data by performing computation using a pixel data stored in a first memory cell in memory units of a same column and in a plurality of rows, and store the first processing data in a second memory cell in one memory unit among the memory units of the same column and in the plurality of rows,” and “a second step to obtain a second processing data by performing computation using the first processing data stored in the second memory cell in the memory units of a same row and in a plurality of columns, and store the second processing data in a third memory cell in one memory unit among the memory units of the same row and in the plurality of columns.”

In contrast, in Fujita, as described in paragraph [0025], when data on a column memory 103 shown in Fig. 10 is transferred to the orthogonal memory cell 101, equivalent to the memory unit array, only the data on the column memory 103 is stored.

As described above, in the present application, at least three independent data are stored in one memory unit 10. To the contrary, in Fujita, only one data is stored. Therefore, the Applicant respectfully submits that certain embodiments of the present application as claimed by Applicant and Fujita are different. Still further, the Applicant respectfully submits that neither Kobayashi nor any of the other cited references cure the deficiencies of Fujita.

Because the present application has the above structure, in performing computation using a matrix of coefficients, it is not necessary to read out the same pixel data over and over. So, very efficient computation may be performed.

In contrast, in Fujita, when data in an orthogonal memory cell is processed at a row computing element 15 equivalent to the first calculator in Applicant's claims, the data in the orthogonal memory cell should be transferred via a row transfer circuit 17 one by one. Likewise, in Fujita, when the data in the orthogonal memory cell is processed at a column computing element 21 equivalent to the second calculator in Applicant's claims, the data in the orthogonal memory cell should be transferred via a column transfer circuit 23 one by one. Therefore, in Fujita, in performing computation using a matrix of coefficients, the data in the orthogonal memory cell should be transferred to the row computing element 15 or the column computing element 21 one by one. This requires reading out the same pixel data over and over. So, the

computation becomes very inefficient.

The present application has the above-mentioned structure to avoid reading out the same pixel data over and over. Based on this distinction, the present application and Fujita are different, and the Applicant respectfully submits that none of the cited references cure the deficiencies of Fujita.

Therefore, the Applicant respectfully submits that claims 1 and 3, as well as their dependent claims, are patentable over the cited references.

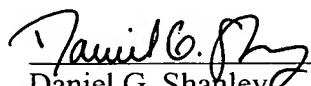
III. Conclusion

In light of the above discussion, Applicants respectfully submit that the present application is in all aspects in allowable condition, and earnestly solicits favorable reconsideration and early issuance of a Notice of Allowance.

The Office Action is invited to contact the undersigned at (202) 220-4420 to discuss any matter concerning this application. The Office is authorized to charge any fees related to this communication to Deposit Account No. 11-0600.

Respectfully submitted,

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